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PHYSIOLOGY.

Ocular Changes Induced by Low Temperature. — Du Bois-Reymond long ago pointed out that when a frog is subjected for a considerable period to a freezing temperature the animal responds by contracting the pupils and closing the eyes. Dr. G. Abelsdorff (*Centralblatt für Physiologie*, Bd. XIII, p. 81) has observed a third ocular symptom, namely, a change in the color of the pupil from black to a gray or milk-white. This is due to the formation of a temporary cataract in the cortical part of the lens. On allowing a frog to recover from a semi-frozen condition, the animal regains its activity before the lens is clear and is for the time being blind; eventually the cataract disappears, and the frog is in all respects normal. The author suggests that cataracts of this kind may occur naturally in hibernating animals.

G. H. P.

Birch's Physiology. — A new class book of elementary practical physiology has been prepared by Professor De Burgh Birch.[1] The first hundred pages are devoted to an account of the construction and use of the microscope, ordinary histological methods, and mammalian histology. The account is necessarily meager and decidedly less satisfactory than that given in the ordinary histologies of the day. Thus in the matter of microtomes for paraffin work, a small hand microtome and the old-fashioned Cambridge rocking microtome are the only ones mentioned. The second part of the book, some sixty pages, deals with the chemistry of the body, including food, blood, bile, and urine. The third and concluding part, of about ninety pages, is devoted to experimental work on nerve and muscle, with a few directions for work on the circulation and some of the senses. The illustrations are sufficiently numerous, but poorly described, so that one is left to guess at what much of the lettering means. It is a question whether such books should not be called rudimentary rather than elementary.

G. H. P.

Formation of Fibrinogen. — The formation of fibrinogen in the blood of mammals has been investigated by Albert Mathews.[2] The fibrinogen in the blood of a cat may be removed by repeated bleedings, defibrinations, and reinjections. The reformation of fibrinogen takes place normally in the absence of the spleen, the pancreas, the kidneys, the reproductive organs, and the brain; but only in very small amounts if the intestines be removed. Fibrinogen is not formed directly from the proteid constituents of the food, for it readily reforms after protracted fasting. If leucocytosis be prolonged for several days by suppurations, the fibrinogen of the blood increases. Fibrinogen is, therefore, probably produced by the decomposition of leucocytes, especially those of the intestinal area. As the fibrinogen of the blood brings about a contractile fibrillar structure in forming a clot, so possibly the fibrinogen of a cell such as a leucocyte may be connected with the formation of the contractile fibrils of the asters in cell division.

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[1] Birch, De Burgh. *A Class Book of Elementary Practical Physiology.* Philadelphia, P. Blakiston's Son & Co. 1899. 273 pp.

[2] Mathews, A. The Origin of Fibrinogen, *The American Journal of Physiology*, vol. iii, pp. 53–85. September, 1899.

G. H. P.

ZOÖLOGY.

The Rotifera.[1] — In this, the first part of a proposed monographic treatment of the Rotifera, Lund gives the more general results of a study which has been conducted on a broad basis. The author has undertaken to examine the group from a purely objective standpoint, without regard to theories of the primitive nature of the organs of the animals, nor of the relationship of the Rotifera to other groups. The result is the most valuable contribution to the biology, morphology, and classification of the Rotifera that has appeared for many years.

Lund examines successively the principal structures that may be used in classification — the nature of the cuticula, the ciliary organ, the mouth parts, the foot, and the sense organs. A strictly objective comparative anatomical standpoint, unbiased by previous theories, is maintained in this study. The structures in question are traced in all their modifications and transitions throughout the group, and an attempt is made to discover the primitive condition of each, together with the path of evolution in the development of the more striking modifications. The œcological value of the organs is brought throughout into the closest relation with their structure. The result is a classification of the Rotifera differing widely from those based on preconceived ideas as to the relationship of this group to the Trochophora, or to other groups; a classification which

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[1] *Denmarks Rotifera. I. Grundtraekkene i Rotiferernes Okologi, Morfologi og Systematik*, af C. Wesenberg Lund. Kjøbenhavn, 1899. 145 pp., 2 plates.